

The Impact of Orthognathic Surgery on Oral Health-Related Quality of Life

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Abstract

Introduction: This study aimed to measure the changes in oral health-related quality of life of the patients, referred to Shahid Chamran Hospital in Shiraz before and after the orthognathic surgery. **Methods:** This prospective study was performed using the 14-item oral health impact profile (OHIP-14) questionnaire. The questionnaires were given both before and four months after the orthognathic surgery to all the patients referred to Shahid Chamran Hospital of Shiraz between 20th of November 2012 and 20th of February 2013. The patients were asked about their motivation for surgery and the responses were classified as functional, esthetic or a combination of functional and esthetic problems. The data achieved from all the questions before and after the surgery were analyzed using repeated measures test. **Results:** Twenty eight patients including 10 men and 18 women participated in this study. The mean scores of quality of life after the surgery decreased significantly compared to that before the treatment ($P < 0.001$). The quality of life was not significantly different among patients with different reasons to undergo orthognathic surgery ($P = 0.290$). **Conclusion:** The results of this study indicated that the oral-health related quality of life of the patients significantly improved following surgical-orthodontic treatment.

Key words: Oral health, orthognathic surgery, quality of life.

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Introduction

Orthognathic surgery includes a combination of surgical procedures performed on jaws and chin with the purpose of correcting the relationship between the jaws and the teeth. Since the upper and lower jaws are the foundation of the facial skeleton, this type of surgery can significantly improve the appearance of the face through correcting the existing imperfections, and thus provide a harmonic balance between the jaws, occlusion, and facial proportions (1).

The motives that bring the patients for orthognathic surgery vary drastically, but most of them share the idea of improvement in beauty as well as correcting the functional imbalances (2). The facial disfigurement can have negative effects on social interaction of the patients (3). Several studies indicated that the patients gained higher self-confidence and better social skills following surgical/orthodontic treatment (2,4). Furthermore, improvement in face appearance after surgery brought the patients a satisfactory psychological condition (5). A retrospective study by Moenning et al. (6) indicated that after orthognathic surgery in dento-facial deformities associated with temporo-mandibular joint disorders (TMDs), TMD symptoms significantly reduced with the exception of facial pain, and quality of

life was significantly improved in almost all patients. Choi et al. (7) compared the data obtained from three types of questionnaires for evaluating the changes in quality of life after orthodontic-surgical treatment and reported a significantly positive effect of orthognathic surgery on the quality of life of the patients, as represented by the three questionnaires.

The orthognathic surgery is known as the main treatment option for dentofacial deformity, and therefore, attention should be paid to the effects of such procedures on the quality of life of the patients (8). Regarding little information about the effects of such treatments on quality of life in Iranian patients, this study aimed to compare the oral health-related quality of life before and four months after the surgical procedure in patients undergoing orthognathic surgery in Shahid Chamran Hospital of Shiraz, south of Iran.

Materials and Methods

This prospective study was run to assess the effect of orthognathic surgery on oral health-related quality of life. All the patients who underwent orthognathic (monomaxillary or bimaxillary) surgery between 20th of November 2012 and 20th of February 2013 in Shahid Chamran Hospital of Shiraz participated in this project. The patients who suffered from maxillofacial syndromes, traumatic incidences, psychological disorders, and those who had already experienced orthognathic surgery were excluded from the sample. An informed consent was obtained from each participant after complete explanation of the research protocol.

The patients were asked about the motivations of requesting orthognathic surgery and the responses were classified as functional, esthetic or a combination of functional and esthetic problems. The 14-item oral health impact profile (OHIP-14) questionnaire was then distributed among the participants before the orthognathic surgery. This questionnaire has already been translated into Persian (OHIP-14-P) and its reliability and validity has been verified (9). The OHIP-14 questionnaire includes 14 questions about the oral health-related quality of life and the patients are asked to define how often they had each problem during the last month. The questions have been designed in multiple choice format and a score would be allocated to each answer (0= never, 1= hardly ever, 2= occasionally, 3= fairly often and 4= very often). Accordingly, the higher the total score, the more negatively would be the oral health-related quality of

life. The patients received enough explanations regarding the questionnaires. Four months after the surgery, the same questionnaire was given to the patients and they were asked to complete it.

The data from the questionnaires were analyzed through SPSS software (Statistical Package for Social Sciences, Version PASW18, Chicago, Illinois, USA). The repeated measures analysis was taken to determine any significant difference in the mean scores of quality of life before and 4 months after surgery among the patients with different reasons to undergo orthognathic treatment. The significance level was determined at $P < 0.05$.

Results

Thirty eight patients underwent orthognathic surgery in Shahid Chamran Hospital of Shiraz during the time span the study was being run. Among these people five suffered from traumatic problems, one had psychological disorder, and two had already undergone orthognathic surgery. Therefore, they were excluded from the study. Moreover, two patients were not willing to participate in this project. A total number of 28 people, including 10 men and 18 women, were included in the study. Among these, 8 people were motivated by esthetic purposes, 9 by functional problems, and 11 patients referred for both esthetic and functional problems.

Table 1 presents the mean scores of quality of life before and after surgery among patients with different motivations for undergoing surgical-orthodontic treatment. The repeated measures analysis revealed no significant interaction between the time of evaluating quality of life and the reason to undergo orthognathic treatment ($P=0.914$; Table 1). There was a significant difference between the mean scores of quality of life before and after orthognathic surgery ($P < 0.001$), indicating that the quality of life of the patients was significantly improved following treatment.

In a comparison between the reasons and motivations of the patients who were supposed to undergo orthognathic surgery, as mentioned previously, the patients were divided into three groups with esthetic problems, functional problems, or both. The repeated measures analysis indicated that the reason to undergo surgery had no significant effect on the quality of life of the patients ($P=0.290$). Therefore, the quality of life was almost equally improved in all three groups of the patients.

Table 1. The mean scores of quality of life (QoL) before and after the surgery among patients with different motivations for undergoing surgical-orthodontic treatment

	Number of patients	QoL before surgery	QoL after surgery
		Mean±SD	Mean±SD
Aesthetic problems	8	28.00±5.13	6.63±2.33
Functional problems	9	28.11±8.01	8.11±7.15
Aesthetic and Functional problems	11	32.09±8.17	10.18±10.11
The effect of reason	F = 1.301	P= 0.290	
The effect of time	F = 118.08	P< 0.001	
The effect of time × reason	F = 0.09	P = 0.914	

Discussion

There is growing interest in studying the relationship between the maxillofacial discrepancies and the patients' quality of life (10). This study was conducted to determine the effect of orthognathic surgery on oral health related quality of life, and the results demonstrated that it was significantly improved after treatment.

According to the World Health Organization, the quality of life can be defined as the understanding of the individuals from their position in life, in the milieu of culture, the values in which they live and in relation to their aims, expectations, standards, and concerns (11). It is necessary to assess the quality of life in order to achieve valuable data, which can improve the treatment procedures and enhance the quality of medical services. On the other hand, an improvement in the quality of services according to the ideals and demands of the patients results in a positive attitude and more effective cooperation in the treatment process. This provides a positive cycle which leads to an increase in the patients' satisfaction from the medical interactions. The patient's awareness about orthodontic part of orthognathic treatment has a significant role in his/her consent and compliance with the post-surgical therapy. It has been demonstrated that 50-70% of the patients who underwent orthognathic surgery had proper information before the surgical procedure, but some patients could benefit from better information regarding their post-surgical orthodontics (1,12,13).

The results of this study are in line with those of Choi et al. (7), Moenning et al. (6), Rustemeyer et al. (14), Kavin et al. (15), Murphy et al. (16), and Soh and Narayanan (8) who indicated significant improvement in the quality of life of the patients after orthognathic surgery. Schmidt et al. (17) conducted a survey regarding the oral health-related quality of life (OHRQoL) among the patients with skeletal malocclusion who requested orthodontic-surgical intervention. They used a 14-item German version of

the oral health impact profile (OHIP-G14) and found that the group requiring surgery had a lower OHRQoL score than the general population. The high OHRQoL scores after surgery were correlated with satisfaction from the treatment outcomes and improved social contacts (17).

In the present study, no significant difference was found either before or after surgery in the mean scores of quality of life among patients with different motivations for requesting orthognathic treatment, implying that the quality of life was improved almost equally in all three groups of patients. In contrast, Rustemeyer et al. (14) reported that the item describing aesthetic of facial features exhibited the greatest difference between pre- and post-surgical scores. In their study, functional limitation, physical disability and chewing function did not change significantly in the patients, undergoing bimaxillary orthognathic surgery whereas psychological discomfort and social disability were significantly improved (14). Murphy et al. (16) used an orthognathic quality of life questionnaire (OQLQ) and a visual analogue scale (VAS) to evaluate the impact of orthognathic treatment on the quality of life of the patients with facial disfigurement. They found that the largest effect of treatment was on facial aesthetics which showed the highest change in scores after treatment (16). Kavin et al. (15) assessed changes in the quality of life of 14 patients experiencing anterior maxillary osteotomy and found that enhancement in the patient's perception of facial esthetics occurred only at 24 weeks post-surgery while oral health and function showed significant improvement within 8 weeks after surgery.

It should be noted that the treatment plan and the results of orthognathic surgery must be in accordance with the socially accepted aims and values, and this may be different from what the patients, themselves, have in mind. The probable reasons for this difference may be the unreal expectations of the patients before the

operation and/or the degrees of achievable improvement after the surgery (18,19).

The great numbers of recent studies on the quality of life of the patients undergoing orthognathic surgery indicate the importance of this subject. Therefore, further comprehensive studies are suggested regarding the different aspects of surgery on patients' emotional, psychological, social and behavioral conditions. It should be noted that this study was the first in the southern parts of Iran, and was limited to one hospital and to a certain period of time. Although the mentioned hospital is the main center for performing orthognathic surgery in Shiraz, but there are other centers which occasionally perform surgical procedures. Therefore, it is recommended to run further research in this field in multiple surgical centers and in longer periods of time. Further studies are also suggested for evaluating the effect of orthognathic surgery on the quality of life of the patients affected with craniofacial syndromes and psychological disorders.

Conclusion

This study indicated a significant effect of orthognathic surgery on oral health-related quality of life. Among the different groups of patients with esthetic problems, functional problems, or both, there was no significant difference in degree of improvement in the quality of life following orthognathic surgery.

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References

1. Modig M, Andersson L, Wardh I. Patients' perception of improvement after orthognathic surgery: pilot study. *Br J Oral Maxillofac Surg* 2006;44: 24-7.
2. Cunningham SJ, Hunt NP, Feinmann C. Psychological aspects of orthognathic surgery: a review of the literature. *Int J Adult Orthodon Orthognath Surg* 1995;10:159-72.
3. Macgregor FC. Facial disfigurement: problems and management of social interaction and implications for mental health. *Aesthetic Plast Surg* 1990;14:249-57.
4. Cunningham SJ, Garratt AM, Hunt NP. Development of a condition-specific quality of life measure for patients with dentofacial deformity: II. Validity and responsiveness testing. *Community Dent Oral Epidemiol* 2002;30:81-90.
5. Pahkala RH, Kellokoski JK. Surgical-orthodontic treatment and patients' functional and psychosocial well-being. *Am J Orthod Dentofacial Orthop* 2007;132:158-64.
6. Moenning JE, Bussard DA, Montefalco PM, Lapp TH, Garrison BT. Medical necessity of orthognathic surgery for the treatment of dentofacial deformities associated with temporomandibular disorders. *Int J Adult Orthodon Orthognath Surg* 1997;12:153-61.
7. Choi WS, Lee S, McGrath C, Samman N. Change in quality of life after combined orthodontic-surgical treatment of dentofacial deformities. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2010;109:46-51.
8. Soh CL, Narayanan V. Quality of life assessment in patients with dentofacial deformity undergoing orthognathic surgery-A systematic review. *Int J Oral Maxillofac Surg* 2013;42:974-80.
9. Ravaghi V, Farrahi-Avval N, Locker D, Underwood M. Validation of the Persian short version of the Oral Health Impact Profile (OHIP-14). *Oral Health Prev Dent* 2010;8:229-35.
10. de Avila ED, de Molon RS, Loffredo LC, Massucato EM, Hochuli-Vieira E. Health-related quality of life and depression in patients with dentofacial deformity. *Oral Maxillofac Surg* 2013;17:187-91.
11. No authors listed. Study protocol for the World Health Organization project to develop a Quality of Life assessment instrument (WHOQOL). *Qual Life Res* 1993;2:153-9.
12. Brennan DS, Spencer AJ. Dimensions of oral health related quality of life measured by EQ-5D+ and OHIP-14. *Health Qual Life Outcomes* 2004;2: 35-40.

13. Williams AC, Shah H, Sandy JR, Travess HC. Patients' motivations for treatment and their experiences of orthodontic preparation for orthognathic surgery. *J Orthod* 2005;32:191-202.
14. Rustemeyer J, Gregersen J. Quality of Life in orthognathic surgery patients: post-surgical improvements in aesthetics and self-confidence. *J Craniomaxillofac Surg* 2012;40:400-4.
15. Kavin T, Jagadesan AG, Venkataraman SS. Changes in quality of life and impact on patients' perception of esthetics after orthognathic surgery. *J Pharm Bioallied Sci* 2012;4:S290-3.
16. Murphy C, Kearns G, Sleeman D, Cronin M, Allen PF. The clinical relevance of orthognathic surgery on quality of life. *Int J Oral Maxillofac Surg* 2011;40:926-30.
17. Schmidt A, Ciesielski R, Orthuber W, Koos B. Survey of oral health-related quality of life among skeletal malocclusion patients following orthodontic treatment and orthognathic surgery. *J Orofac Orthop* 2013;74:287-94.
18. Jensen SH. The psychosocial dimensions of oral and maxillofacial surgery: a critical review of the literature. *J Oral Surg* 1978;36:447-53.
19. Kiyak HA, McNeill RW, West RA. The emotional impact of orthognathic surgery and conventional orthodontics. *Am J Orthod* 1985;88:224-34.

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